Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor of today is typically either a series-parallel wound direct current electric motor that consists of a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is located on the driveshaft and meshes the pinion using the starter ring gear that is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. When the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls the pinion gear away from the ring gear. This action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, for instance because the driver fails to release the key when the engine starts or if the solenoid remains engaged since there is a short. This causes the pinion to spin separately of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is actually an important step as this particular kind of back drive will enable the starter to spin so fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement will prevent making use of the starter as a generator if it was made use of in the hybrid scheme mentioned prior. Usually a standard starter motor is meant for intermittent utilization that would prevent it being utilized as a generator.

The electrical parts are made to be able to function for approximately 30 seconds to be able to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are intended to save weight and cost. This is truly the reason most owner's guidebooks intended for automobiles recommend the operator to stop for at least 10 seconds after each ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was introduced onto the marked in the early part of the 1960's. Before the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft that consists of a starter drive pinion placed on it. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and introduced during the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better as the average Bendix drive utilized to disengage from the ring as soon as the engine fired, even if it did not stay running.

Once the starter motor is engaged and begins turning, the drive unit is forced forward on the helical shaft by inertia. It then becomes latched into the engaged position. As soon as the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for instance it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be prevented before a successful engine start.